

WHAT IS CLAIMED IS:

1. A peristaltic machine, comprising:

a hopper to store viscous material;

a flexibly deformable tubing section connected to said

5 hopper for receiving viscous material from said hopper; and

a pair of rollers cooperating to compress said tubing
section and thereafter to move forwardly along said tubing
section such that the viscous material is forwardly propagated.

10 2. The peristaltic machine according to claim 1, further
comprising:

a manifold connected between said hopper and said tubing
section to transmit the viscous material there between;

15 a plurality of additional flexibly deformable tubing
sections connected to said manifold for receiving viscous
material,

wherein said pair of rollers cooperate to simultaneously
compress all tubing sections and thereafter to move forwardly
along each of the tubing sections to thereby forwardly propagate
20 the viscous material.

3. The peristaltic machine according to claim 1, wherein
said pair of cooperating rollers includes a primary roller and a
secondary roller, the machine further comprising:

means for controlling the primary roller to cyclically move in a forward direction and a rearward direction about an oval travel path; and

5 means for controlling the secondary roller to cyclically move in the forward direction and the rearward direction about a linear travel path,

wherein said primary roller compresses said tubing section to said secondary roller during a first portion of the oval travel path and does not compress said tubing section during a 10 second portion of the oval travel path.

4. The peristaltic machine according to claim 1, further comprising:

15 a flow control unit connected to a portion of said tubing section forward of said pair of rollers, said flow control unit alternately constricting and unrestricting the portion of said tubing section in synchronism with the forward movement by said pair of rollers.

20 5. The peristaltic machine according to claim 4, wherein said flow control unit continuously constricts the portion of said tubing section to closure until execution of the forward movement by said pair of rollers.

6. The peristaltic machine according to claim 4, wherein
said flow control unit partially constricts said tubing section
during execution of the forward movement by said pair of rollers
and unconstricts said tubing section after completion of the
5 forward movement to thereby draw back the viscous material in a
reverse direction from an output end of said tubing section.

7. The peristaltic machine according to claim 1, further
comprising:

10 a nozzle connected to an output end of said tubing section
to shape the viscous material upon output from said tubing
section.

15 8. The peristaltic machine according to claim 1, further
comprising:

a carriage connected to an output end of said tubing
section, wherein said carriage is controlled to move about a
predetermined travel path to thereby direct an output location of
the viscous material.

20 9. The peristaltic machine according to claim 9, wherein
the predetermined travel path of said carriage is executed in
synchronism with the forward movement by said plurality of
rollers.

10. The peristaltic machine according to claim 8, further comprising:

a flow control unit mounted on said carriage and connected to a portion of said tubing section, said flow control unit
5 alternately constricting and unconstricting the portion of said tubing section in synchronism with the forward movement by said plurality of rollers.

11. A peristaltic machine, comprising:

10 a machine body;
a flexibly deformable tubing section connected to said machine body, said tubing section configured and arranged to receive viscous material;
a peristaltic unit connected to said machine body, said peristaltic unit to compress a first portion of said tubing section and move compression of said tubing section forwardly from said first portion such that viscous material received within said tubing section is propagated forwardly; and
15 a carriage connected to an output end of said tubing section, wherein said carriage is controlled to move about a predetermined path with respect to said machine body to thereby direct an output location of the viscous material.
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12. The peristaltic machine according to claim 11, wherein
said peristaltic unit includes

a pair of rollers cooperating to compress said tubing
section and to execute a travel path in a forward direction along
5 said tubing section such that the viscous material is forwardly
propagated.

13. The peristaltic machine according to claim 12, further
comprising:

10 means for controlling the primary roller to move in an oval
travel path; and

means for controlling the secondary roller to move in a
linear travel path,

wherein said pair of rollers constrict said tubing section
15 during a first portion of the oval travel path and do not
constrict said tubing section during a second portion of the oval
travel path.

14. The peristaltic machine according to claim 11, further
20 comprising:

a flow control unit connected to a portion of said tubing
section forward of said peristaltic unit, said flow control unit
alternately constricting and unconstricting the portion of said

tubing section in synchronism with propagation of the viscous material by said peristaltic unit.

15. The peristaltic machine according to claim 14, wherein
5 said flow control unit continuously constricts the portion of
said tubing section to closure until propagation of the viscous
material by said peristaltic unit.

16. The peristaltic machine according to claim 14, wherein
10 said flow control unit partially constricts said tubing section
during propagation of the viscous material by said peristaltic
unit and unconstricts said tubing section after propagation of
the viscous material by said peristaltic unit to thereby draw
back the viscous material in a reverse direction from an output
15 end of said tubing section.

17. A peristaltic machine, comprising:
a machine body;
a hopper connected to said machine body to store viscous
20 material;
a manifold connected to said machine body and said hopper
for receiving the viscous material;
a plurality of flexibly deformable tubing sections connected
to said manifold for receiving the viscous material;

a peristaltic unit connected to said machine body, said
peristaltic unit to simultaneously compress portions of each of
said plurality of said tubing sections and to move each
compressed portion forwardly to thereby forwardly propagate the
5 viscous material within each of said tubing sections; and

10 a carriage connected to an output end of each of said tubing
sections, wherein said carriage is controlled to move about a
predetermined path with respect to said machine body, and to
thereby direct simultaneous material output from each of said
tubing sections.

18. The peristaltic machine according to claim 17, further
comprising:

15 a flow control unit connected to said machine body and
connected to each of said tubing sections forward of said
peristaltic unit, said flow control unit alternately constricting
and unrestricting each of said tubing sections in synchronism
with propagation of the material by said peristaltic unit.

20 19. The peristaltic machine according to claim 18, wherein
said flow control unit continuously constricts each of said
sections until initiation of material propagation by said
peristaltic unit.

20. The peristaltic machine according to claim 18, further comprising:

a draw back control unit mounted on said carriage and connected to output ends of each of said tubing sections, wherein
5 said draw back control unit partially constricts said tubing sections during propagation of the material by said peristaltic unit and unrestricts each of said tubing sections after propagation of the material by said peristaltic unit to thereby draw back the viscous material in a reverse direction from the
10 output ends of each of said tubing sections.